Update on Electricity Landscapes

2022 Interim Topic Priority #3

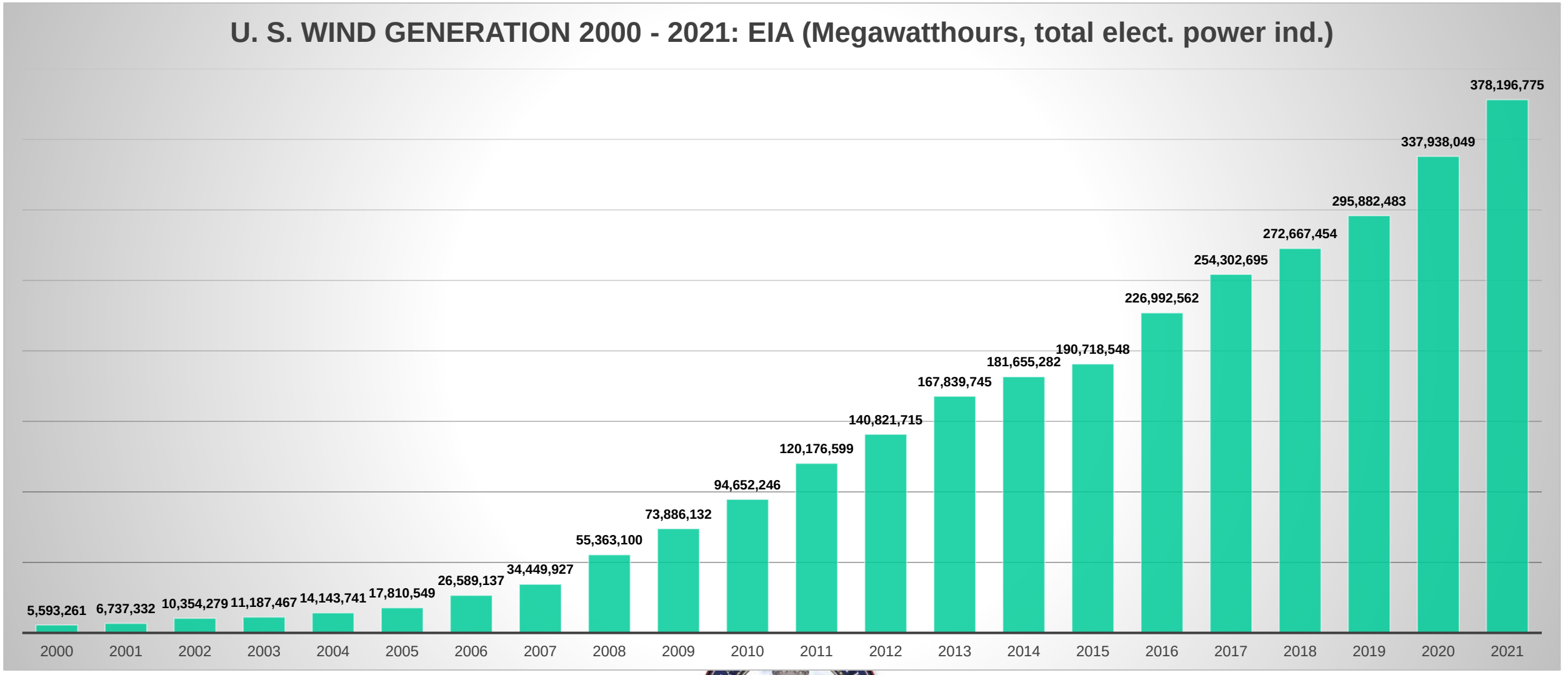
WYOMING LEGISLATIVE SERVICE OFFICE

November 21, 2022 – Joint Revenue Committee

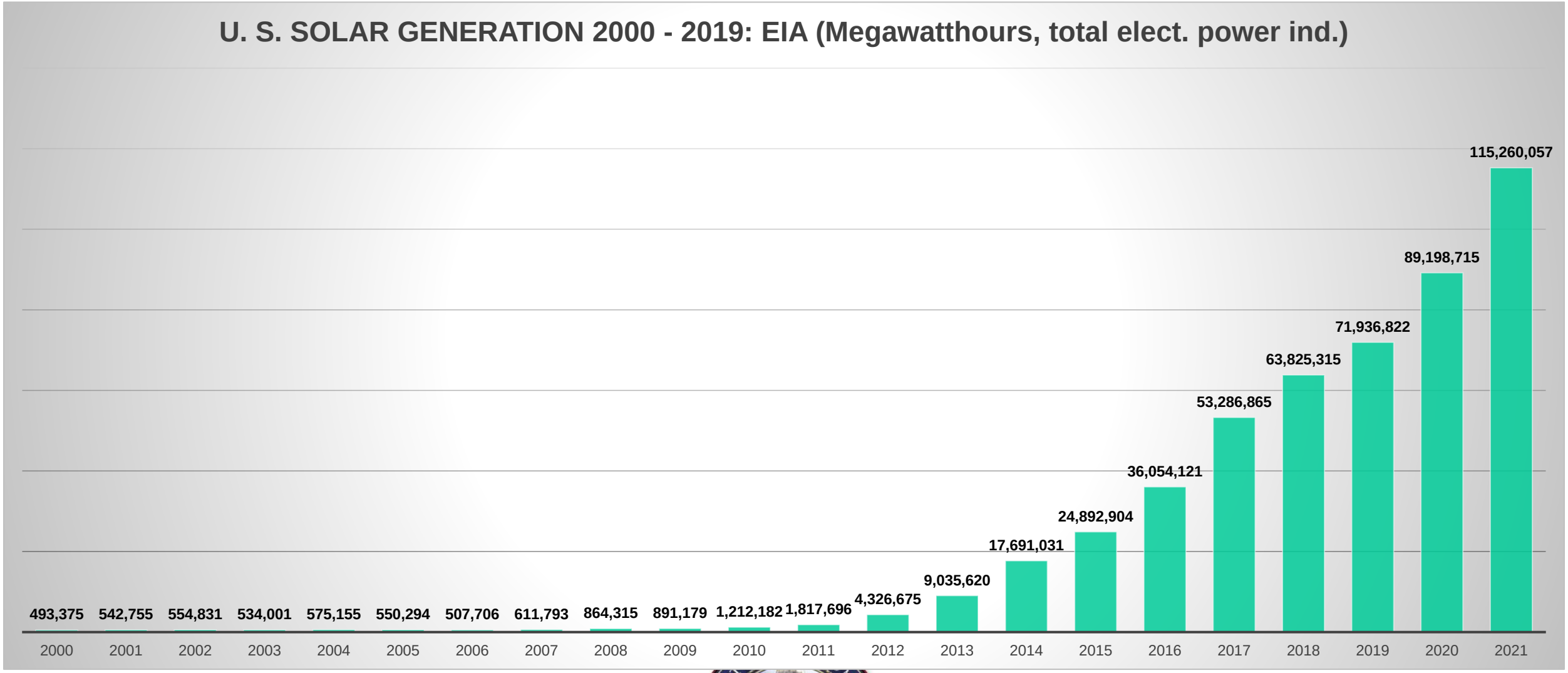
U.S. Electric Power Industry Generation – 2000, 2019 and 2021

- According to the Energy Information Administration (EIA), approx. 3.8 billion Megawatt hours (MWh) of electricity were generated by the electric power industry in the U.S. in calendar year 2000.
  - Over 70% was generated from fossil fuels.
  - Just under 20% was generated from nuclear power
  - 0.16% generated from wind and solar (5.6 million MWh wind, 0.5 million MWh solar).
- According to EIA, approx. 4.1 billion MWh of electricity were generated by the electric power industry in the U.S. in calendar year 2019.
  - Over 62% was generated from fossil fuels.
  - Just under 20% was generated from nuclear power
- 9.0% generated from wind and solar (295.9 million MWh wind, 71.9 million MWh solar)
- According to EIA, approx. 4.1 billion MWh of electricity were generated by the electric power industry in the U.S. in calendar year 2021.
  - 61% was generated from fossil fuels.
  - Just under 19% was generated from nuclear power
  - 12.0% generated from wind and solar (378.2 million MWh wind, 115.3 million MWh solar).

U.S. Electric Power Industry Generation – Wind Power: 2000 - 2021



U.S. Electric Power Industry Generation – Solar Power: 2000 - 2021



State Renewable Portfolio Standards and Goals

- According to a report by the National Council of State Legislatures (NCSL), 27 states have current renewable portfolio standards (RPS), 3 states have current renewable portfolio goals, and 7 states have allowed their portfolio standards or goals to expire.
  - Iowa was the first state to establish an RPS in 1983.
  - RPS energy sources often include wind, solar, biomass, geothermal, and hydroelectric.
  - In many states, RPS are measured by the percentage of retail electric sales.
  - Most states with current or recently updated RPS have targets of at least 40%. 10 states have set 100% clean or renewable requirements with deadlines ranging between 2030 and 2050. Three states have targets of 50% or greater by 2030.
- State Renewable Portfolio Standards and Goals dated August 13, 2021 by NCSL

State Renewable Portfolio Standards and Goals

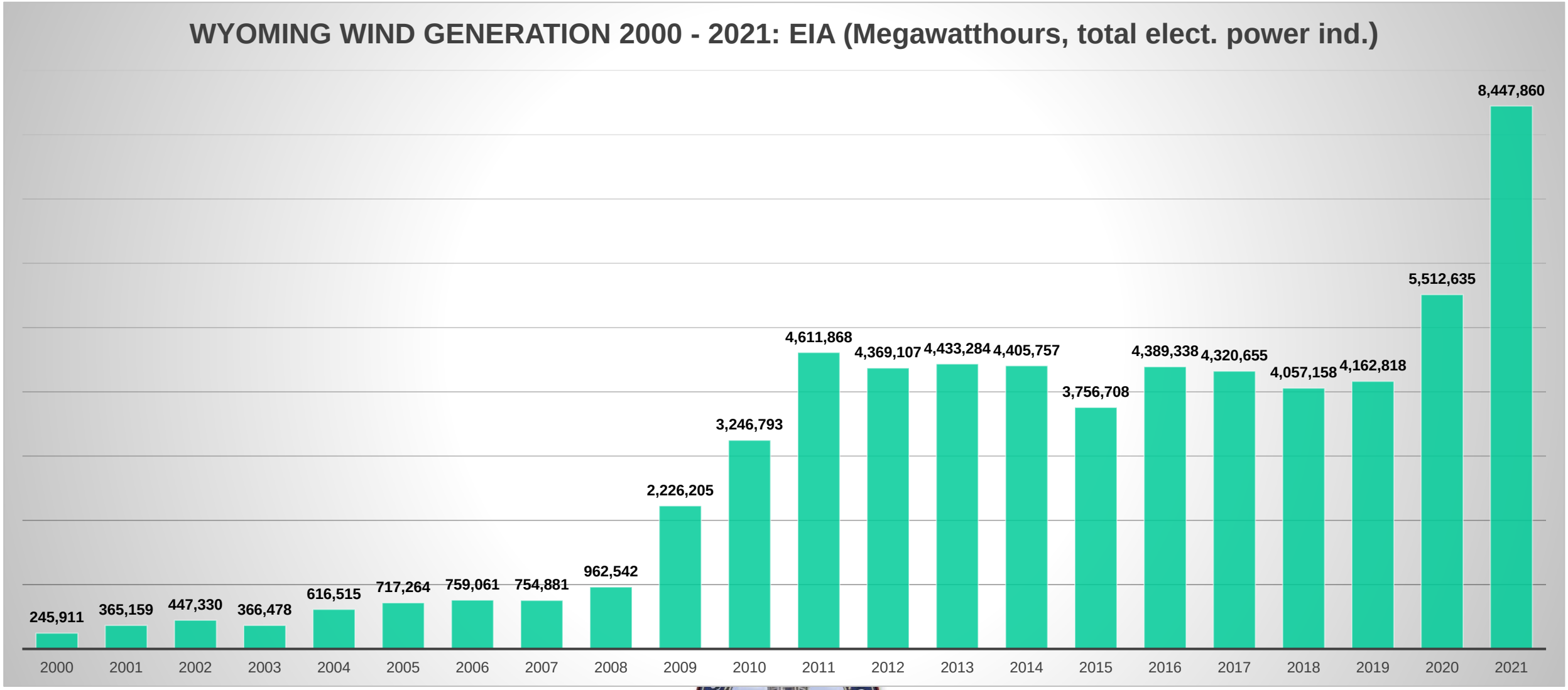
States with Renewable Portfolio Standards (27 states)	States with Voluntary Goals (3 states)	States with no or expired standards and goals (20 states)
Arizona, California, Colorado, Connecticut,	Indiana	Alabama, Alaska, Arkansas,
Delaware, Hawaii, Illinois, Maine,	South Carolina	Florida, Georgia, Idaho, Iowa,
Maryland, Massachusetts, Michigan,	Utah	Kansas, Kentucky, Louisiana,
Minnesota, Missouri, Nevada,		Montana, Mississippi, Nebraska,
New Hampshire, New Jersey, New Mexico,		North Dakota, Oklahoma,
New York, North Carolina, Ohio, Oregon,		South Dakota, Tennessee,
Pennsylvania, Rhode Island, Texas, Vermont,		West Virginia, Wisconsin,
Virginia, Washington		Wyoming

From NCSL report dated August 13, 2021 entitled, "State Renewable Portfolio Standards and Goals"

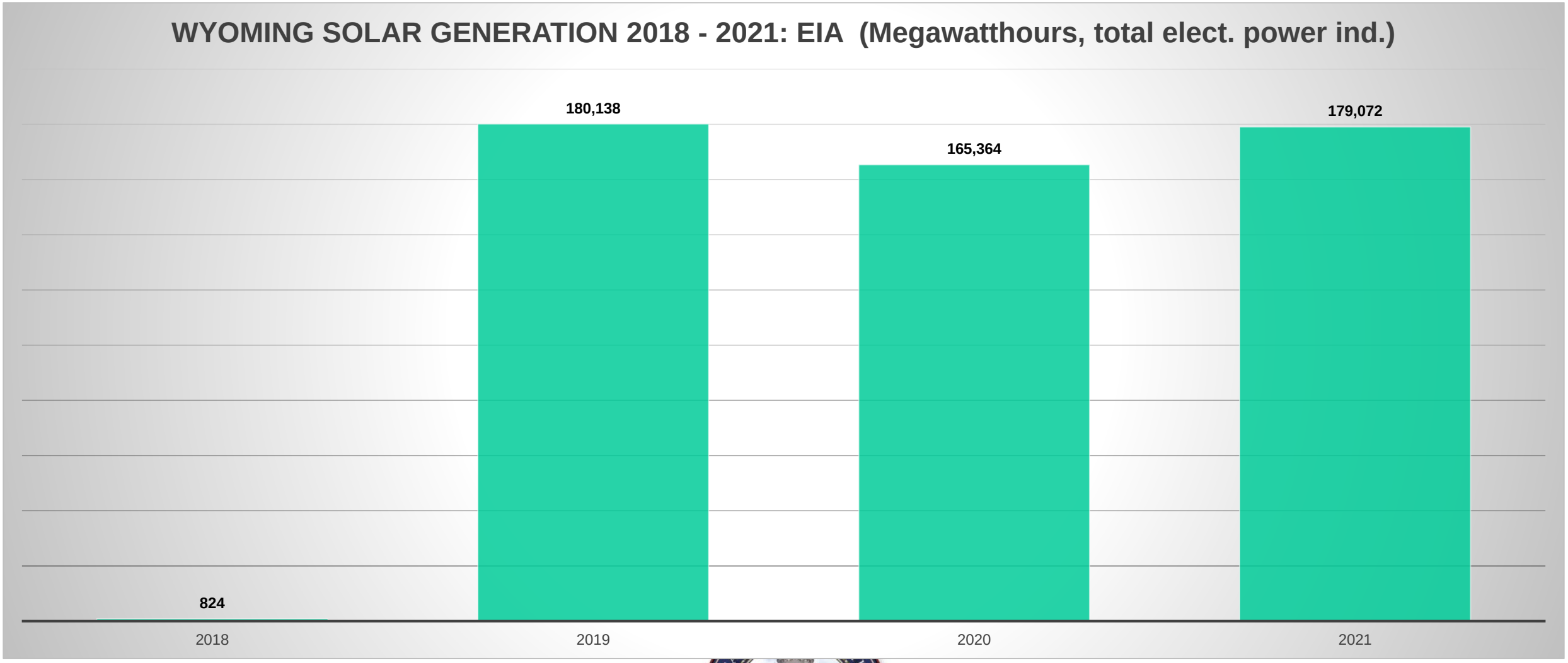
Wyoming Electric Power Industry Generation – 2000, 2019 and 2021

- According to EIA, approx. 45.5 million MWh of electricity were generated by the electric power industry in Wyoming in calendar year 2000.
  - 95.8% was generated from coal (43.6 million MWh).
  - 0.5% generated from wind and solar (0.25 million MWh wind, 0 MWh solar).
- According to EIA, approx. 42.1 million MWh of electricity were generated by the electric power industry in Wyoming in calendar year 2019.
  - 83.9% was generated from coal (35.4 million MWh).
  - 10.3% generated from wind and solar (4.2 million MWh wind, 0.18 million MWh solar).
- According to EIA, approx. 43.5 million MWh of electricity were generated by the electric power industry in Wyoming in calendar year 2021.
  - 73.7% was generated from coal (32.0 million MWh).
  - 19.8% generated from wind and solar (8.4 million MWh wind, 0.18 million MWh solar).

Wyoming Electric Power Industry Generation – Wind Power: 2000 - 2021



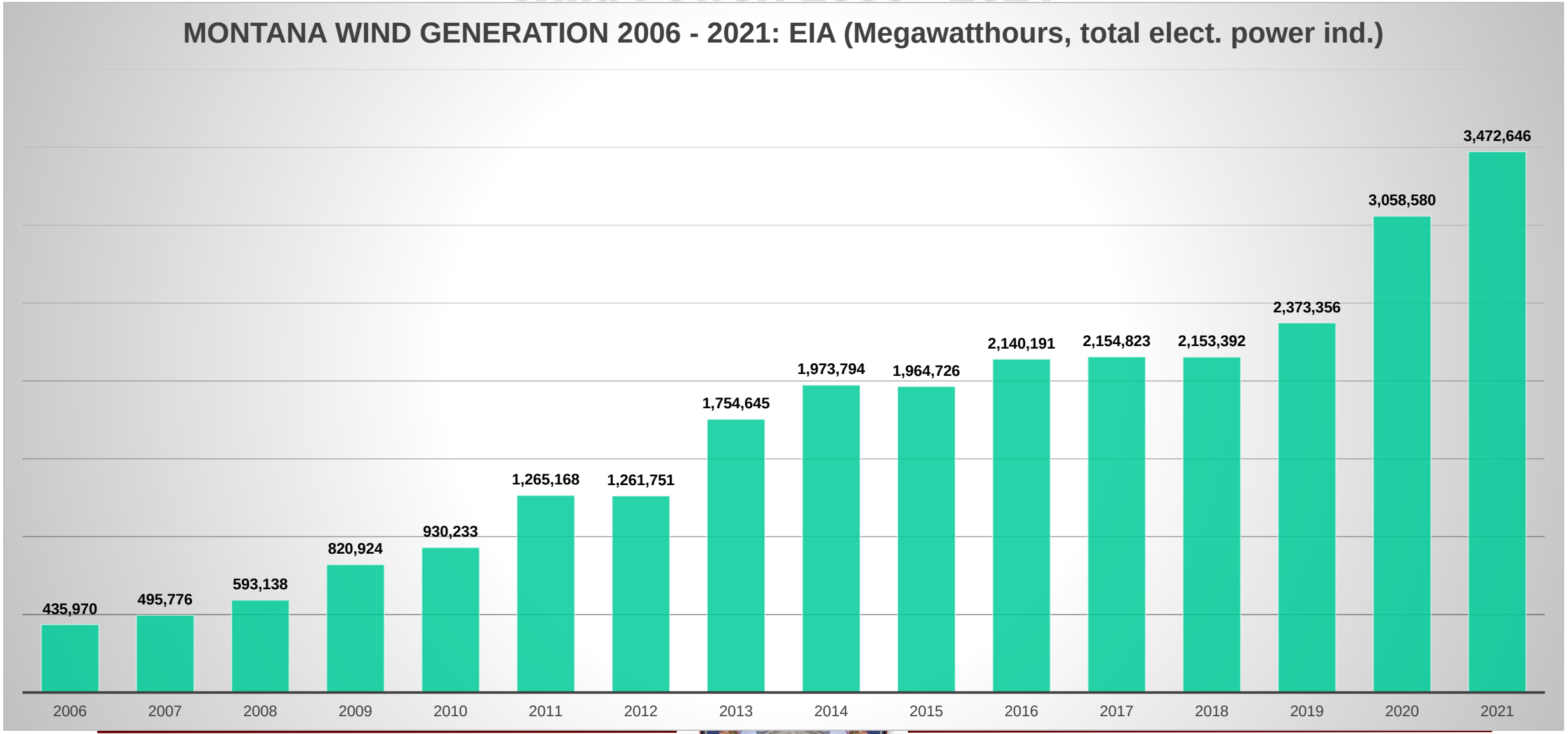
Wyoming Electric Power Industry Generation – Solar Power: 2000 - 2021



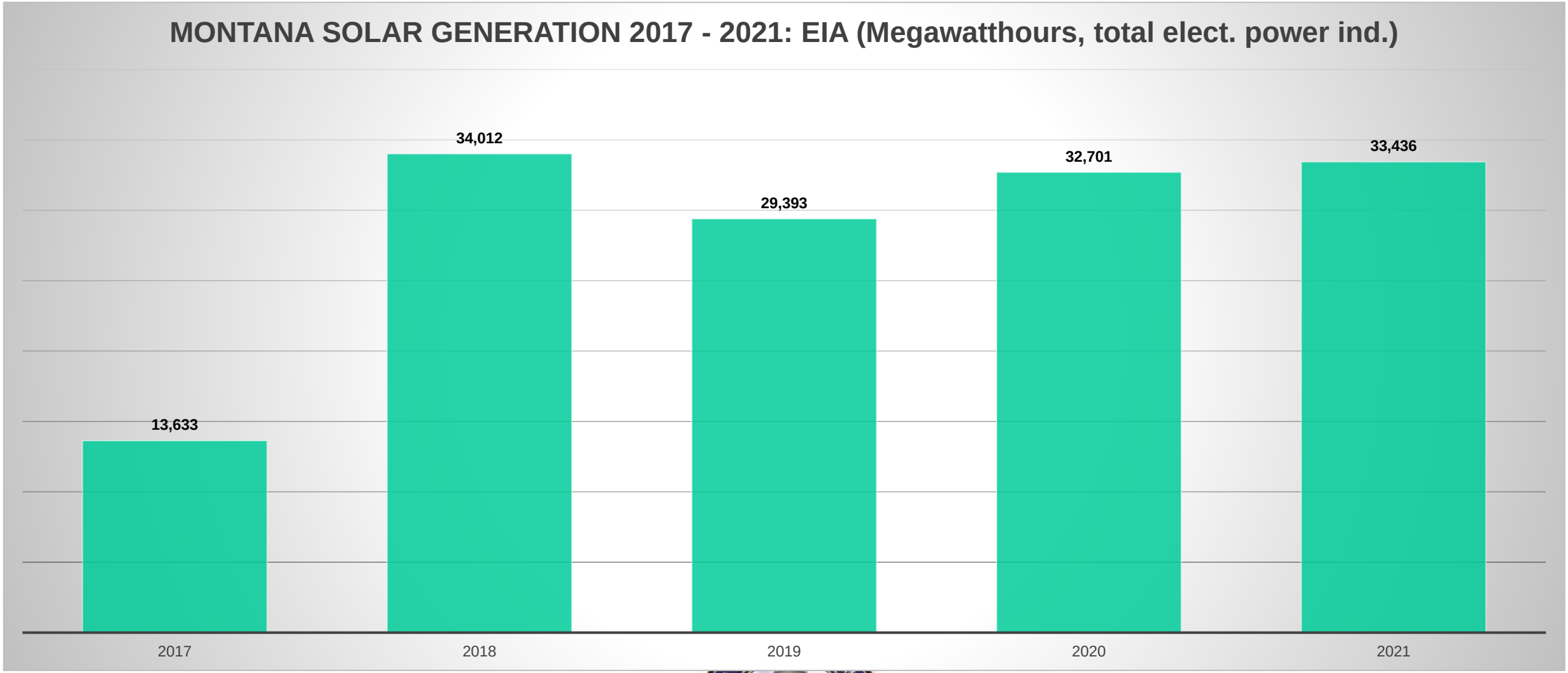
Montana Electric Power Industry Generation – 2000, 2019 and 2021

- According to EIA, approx. 26.5 million MWh of electricity were generated by the electric power industry in Montana in calendar year 2000.
  - 61.2% was generated from coal (16.2 million MWh).
  - 36.4% was generated from conventional hydroelectric (9.6 million MWh).
  - 0% generated from wind and solar.
- According to EIA, approx. 27.8 million MWh of electricity were generated by the electric power industry in Montana in calendar year 2019.
  - 50.7% was generated from coal (14.1 million MWh).
  - 36.0% was generated from conventional hydroelectric (10.0 million MWh).
  - 8.6% was generated from wind and solar (2.4 million MWh wind, 0.29 million MWh solar)
- According to EIA, approx. 24.9 million MWh of electricity were generated by the electric power industry in Montana in calendar year 2021.
  - 43.6% was generated from coal (10.9 million MWh).
  - 37.1% was generated from conventional hydroelectric (9.3 million MWh).
  - 14.1% generated from wind and solar (2.3 million MWh wind, 0.33 million MWh solar).

Montana Electric Power Industry Generation – Wind Power: 2000 - 2021



Montana Electric Power Industry Generation – Solar Power: 2000 - 2021



Installed and Future Wind and Solar Capacity – Wyoming and Montana

- "Electricity generation capacity" is the maximum electric output an electricity generator can produce under specific conditions (EIA FAQs).
- The following information is from the American Wind Energy Association (2nd qtr. 2020) and the Wind Energy Technologies Office (3rd qtr. 2022)
  - Wyoming had 1,816 megawatts (MW) of installed wind capacity with 4,341 MW under construction (2nd qtr. 2020).
  - Wyoming has 3,176 MW of installed wind capacity with 3,503 MW under construction (3rd qtr. Of 2022).
  - Montana had 880 MW of installed wind capacity with 240 MW under construction (2nd qtr. 2020).
  - Montana has 1,120 MW of installed wind capacity with 0 MW under construction (3rd qtr. 2022).
- The following information is from the Solar Energy Industries Association (June 11, 2020 and September 8, 2022).
  - As of June 11, 2020, Wyoming had 110.15 MW of installed solar capacity and installed solar capacity was projected to increase by 52.49 MW over the next 5 years.
  - As of September 8, 2022, Wyoming has 143.4 MW of installed solar capacity and installed solar capacity is projected to increase by 234 WW over the next 5 years.
  - As of June 11, 2020, Montana had 61.32 MW of installed solar capacity and installed solar capacity was projected to increase by 251.19 MW over the next 5 years.
  - As of September 11, 2022, Montana has 126.5 MW of installed solar capacity and installed solar capacity is projected to increase by 1,449 MW over the next 5 years.

Wyoming Power Generation Tax Policy

Tax on Production of Electricity from Wind Resources

- A tax of $1.00 per megawatt-hour is levied on the production of electricity produced from wind resources on or after Jan. 1, 2012.
- The tax is imposed on each megawatt hour of electricity produced, at the point of interconnection with an electric transmission line.
- Electricity produced from a wind turbine shall not be subject to the tax imposed until 3 years after the turbine first produced electricity for sale.

Tax on Production of Electricity from Nuclear Reactors

- A tax of $5.00 per megawatt-hour is levied on the sale of electricity produced from nuclear reactors on or after Jan. 1, 2021.
- The tax is imposed on each megawatt hour of electricity generated from the nuclear reactor and sold.
- No tax shall be imposed on any advanced nuclear reactor operated in accordance with W.S. 35-11-2101. Beginning July 1, 2035, a taxpayer shall only qualify for the exemption authorized under this subsection for any month that not less than eighty percent (80%) of the advanced nuclear reactor's uranium used for producing electricity was sourced from uranium mines located in the United States.

Questions?